

R E P O R T O N T H E M I N E R A L
E X P L O R A T I O N
A N D M I N I N G
O F
T H E T A N G I E R - W A V E R L E Y P R O J E C T

Lat. 51 24'N; Long. 117 50'W

N.T.S. 82 N/5 W

REVELSTOKE M. D.

British Columbia

SUMMARY AND EVALUATION

for

MANDALLA RESOURCES Ltd.

by

I. BOROVIĆ, P. Eng.
geologist

VANCOUVER, B. C.
Nov. 10, 1987.

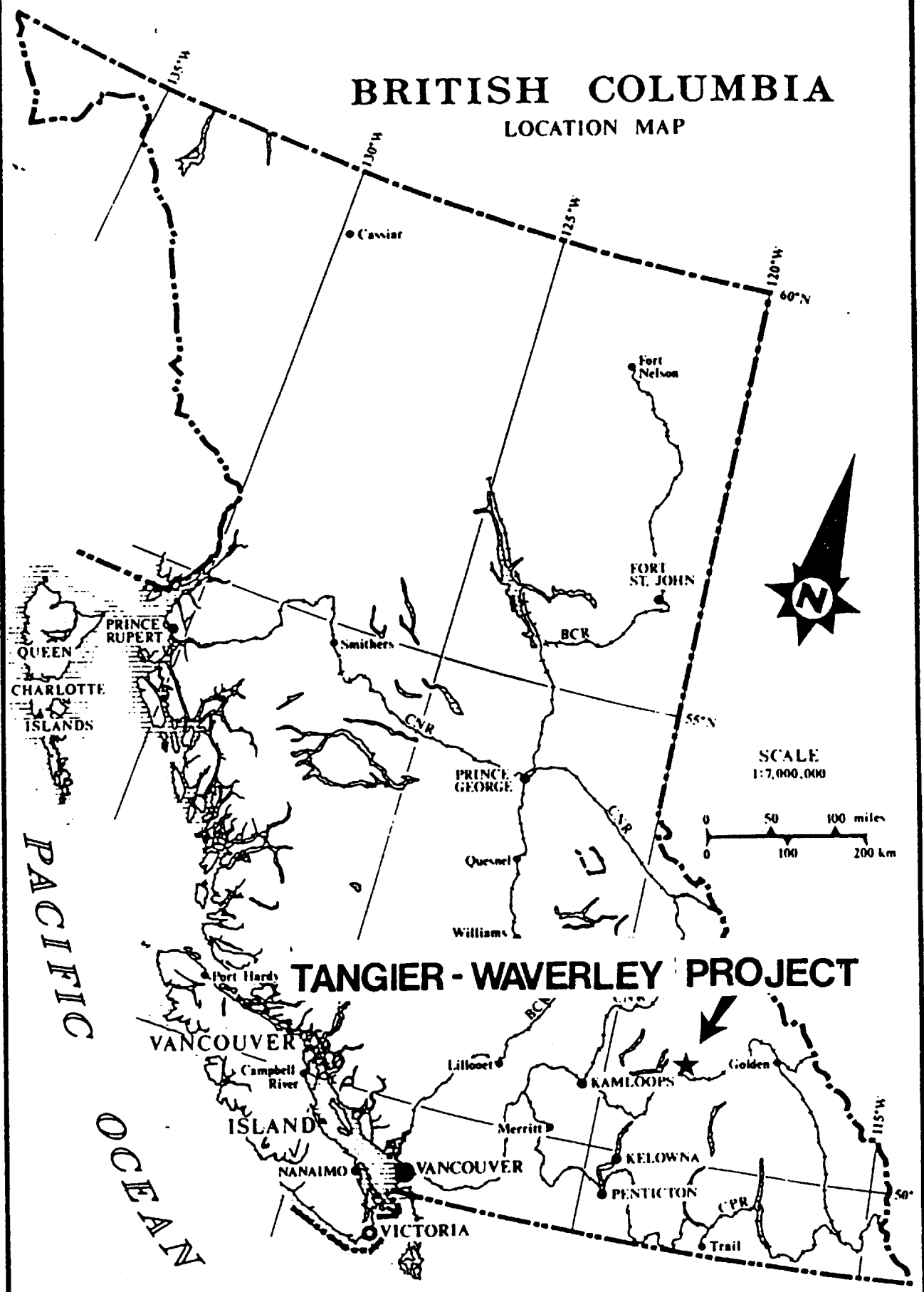
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BRITISH COLUMBIA LOCATION MAP



TANGIER - WAVERLEY PROJECT

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DATE: _____
FIG. No. **1**

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The Tangier-Waverley Property is located about 80 km northeast of Revelstoke, B.C. The property is composed of 6 Crown grants, and 20 located mineral claims with total of 264 units covering the Tangier River valley to the southeast and upper waters of the Sorcerer Creek (North fork of the Downey Creek) to the north west.

The property's mineral potential has been known since 1896 and has been explored by a number of individuals and companies since then.

MANDALLA RESOURCES Ltd. has optioned the property in 1987 and intends to carry out an extensive program of diamond drilling in the areas of former producers The Tangier and Waverley Mines. The geochemical, geophysical and geological exploration, together with trenching, sampling and mapping is also recommended in order to evaluate less known parts of the Property.

The property is underlain by conformable beds of siliceous and argillaceous limestones, slates, and schists which strike SE and dip NE.

The vein at Waverley is reported to be about 1000 m (3000 feet) long and 15 m (50 feet) wide. It was worked from Tunnel #1 to Tunnel #3 a difference in elevation of about 137 m (450 feet). The silver, gold, lead, zinc and copper bearing veins and replacement lenses are located in the limestone member.

The veins carry economic concentrations of silver, lead, zinc, copper and gold mineralization.

Waverley

Gold assays ranged from 0.02 oz/t to 0.25 in the Tunnels #1 & 2
Silver assays ranged from 11.0 oz/t to 69.7 oz/t in the same samples.

Lead assayed from 1.7 % to 42.2 %

Tangier

Gold assays ranged from 0.024 to 2.90 oz/t in the stock pile. Silver assays ranged from 1.29 to 12.62 oz/t, Lead assays range from 0.20 % to 13.98 % and Zinc assays ranged from 0.59 % to 15.46 %.

Sampling by the writer in October 1987, confirmed the recorded values of mineralization in the Tangier Mine area. Waverley Mine veins could not be sampled because the workings are caved in and the only sampling was done on the surface exposure of more resistant wall rocks. The results were very low for all metals.

Using past production and recently obtained values of minerals contained in the veins on the Tangier and Waverley workings, it is concluded that potential for medium tonnage of high grade mineralization does exist on the Tangier-Waverley property.

It is also my opinion that it is necessary to initiate a drilling program to evaluate the mineralization of several veins at depth.

Therefore I recommend the following exploration program for the 1987/88 season:

The exploration program is to consist of two phases, whereby the second phase is dependant on the results of the first phase.

Phase 1

The Phase 1 program is a target evaluation phase. In the Tangier and Waverley Mines areas a number of diamond drill holes should be drilled in order to intersect mineralized structures at depth.

Phase 2

The phase 2 is to consists of additional diamond drilling for further evaluation and tonnage development.

ESTIMATED BUDGET 1987/88.

PHASE 1
(November 1987 to March 1988)

Road work, permits (bulldozer, backhoe).....	\$	44 000.00
Drilling, blasting.....	\$	29 000.00
Mobilization-Demob (crews, bulldozer, backhoe, drill, camp buildings etc.).....	\$	23 500.00
Geology, engineering, supervision, evaluation....	\$	21 000.00
Mapping, sampling,	\$	24 000.00
Assaying.....	\$	12 000.00
Geophysical survey		
Airborne EM and Mag (500 km @ \$ 100.00).....	\$	50 000.00
Ground follow up	\$	14 650.00
Camp expenses.....	\$	8 000.00
Drill site construction & trenching.....	\$	19 000.00
Diamond drilling (2 000 m) @ \$ 160.00.....	\$	320 000.00
Transportation (helicopter, truck).....	\$	36 000.00

Total Phase 1	\$	601 150.00

PHASE 2

Geology, engineering, supervision, evaluation....	\$	250 000.00
Road maintenance	\$	50 000.00
Camp expenses.....	\$	50 000.00
Diamond drilling.....	\$	1 500 000.00
Transportation.....	\$	50 000.00

Total Phase 2	\$	1 900 000.00

INTRODUCTION

MANDALLA RESOURCES Ltd., a Vancouver, B.C. based mineral exploration company, intends to continue exploring the silver, lead, zinc and gold-bearing mineralized structures covered by the Tangier-Waverley property.

The writer has examined the property and sampled the waste dumps in the Tangier Mine area and wall rock in the Waverley area.

He has also supervised exploration work done for the purpose of establishing the best locations for drilling of diamond drill holes planned to begin in November 1987.

The following report describes the results and gives a summary of previous exploration efforts and recommends exploration work and budget.

PROPERTY (Fig. 1, 2)

Location: northern boundary: Lat. 51 30' N.;
 southern boundary: Lat. 51 21' N.;
 western boundary: Long. 118 01' W.
 eastern boundary: Long. 117 48' W.

N.T.S. map 82 N/05W, Revelstoke M.D. About 80 road/km north east from the town of Revelstoke, B.C. on the Tangier River and Sorcerer Creek (North Fork of Downy Creek).

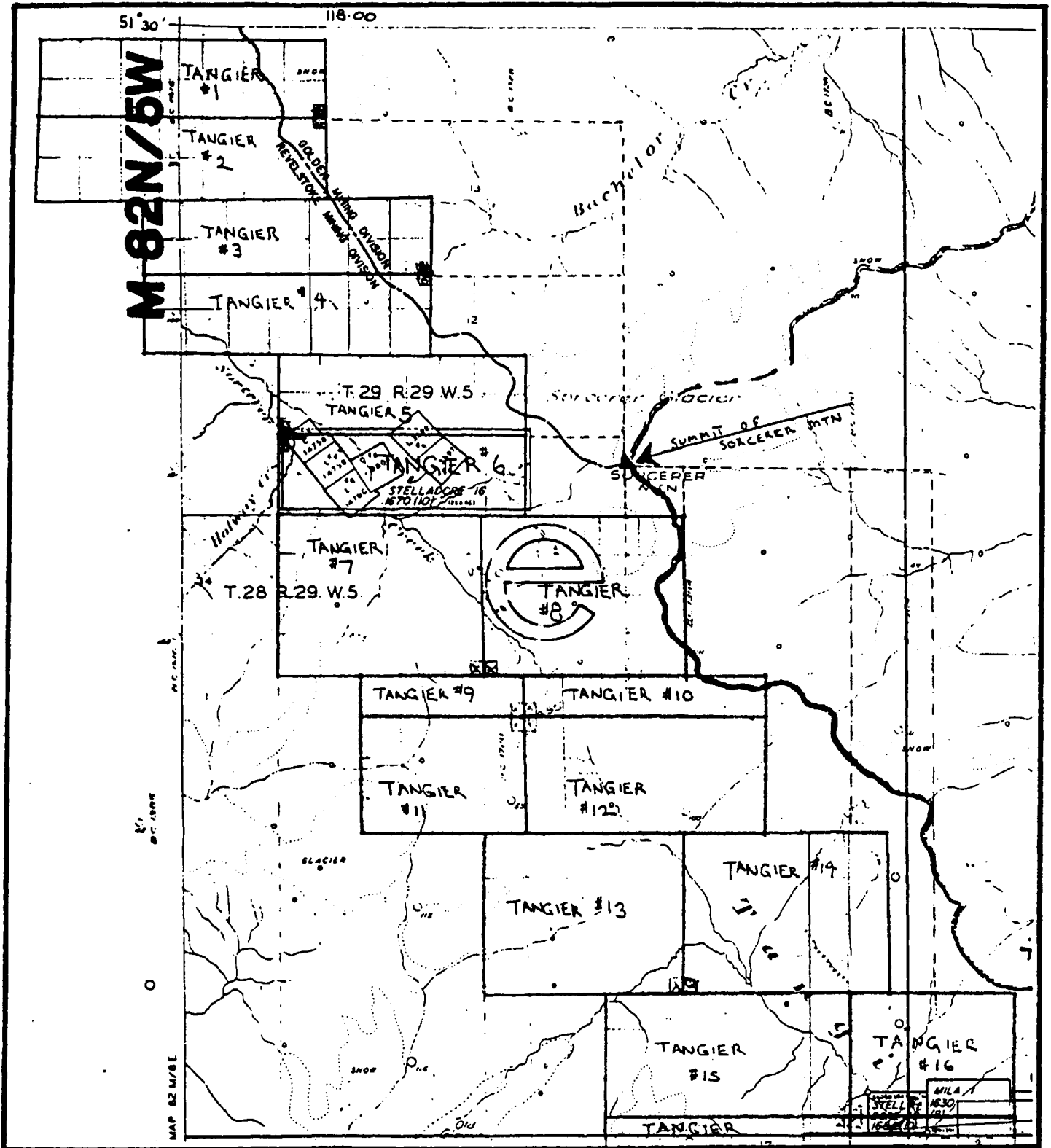
Claims: (Fig. 2) The Property consists of the following claims:

Crown Grants:

	Lot No.
Montague	03596
Waverley	03597
Tangier	03600
Juno	14758
Juno 2	14759
Juno 3	14760

Located mineral claims:

	Tag No.	Date recorded
Tangier 1(14)	121359	11/3/87
Tangier 2(14)	121360	"
Tangier 3(14)	121361	"
Tangier 4(14)	121362	"
Tangier 5(12)	121363	"
Tangier 6(12)	121364	"
Tangier 7(20)	121365	"
Tangier 8(20)	121366	"
Tangier 9(4)	121367	"
Tangier 10(6)	121368	"
Tangier 11(12)	121369	"
Tangier 12(18)	121370	"



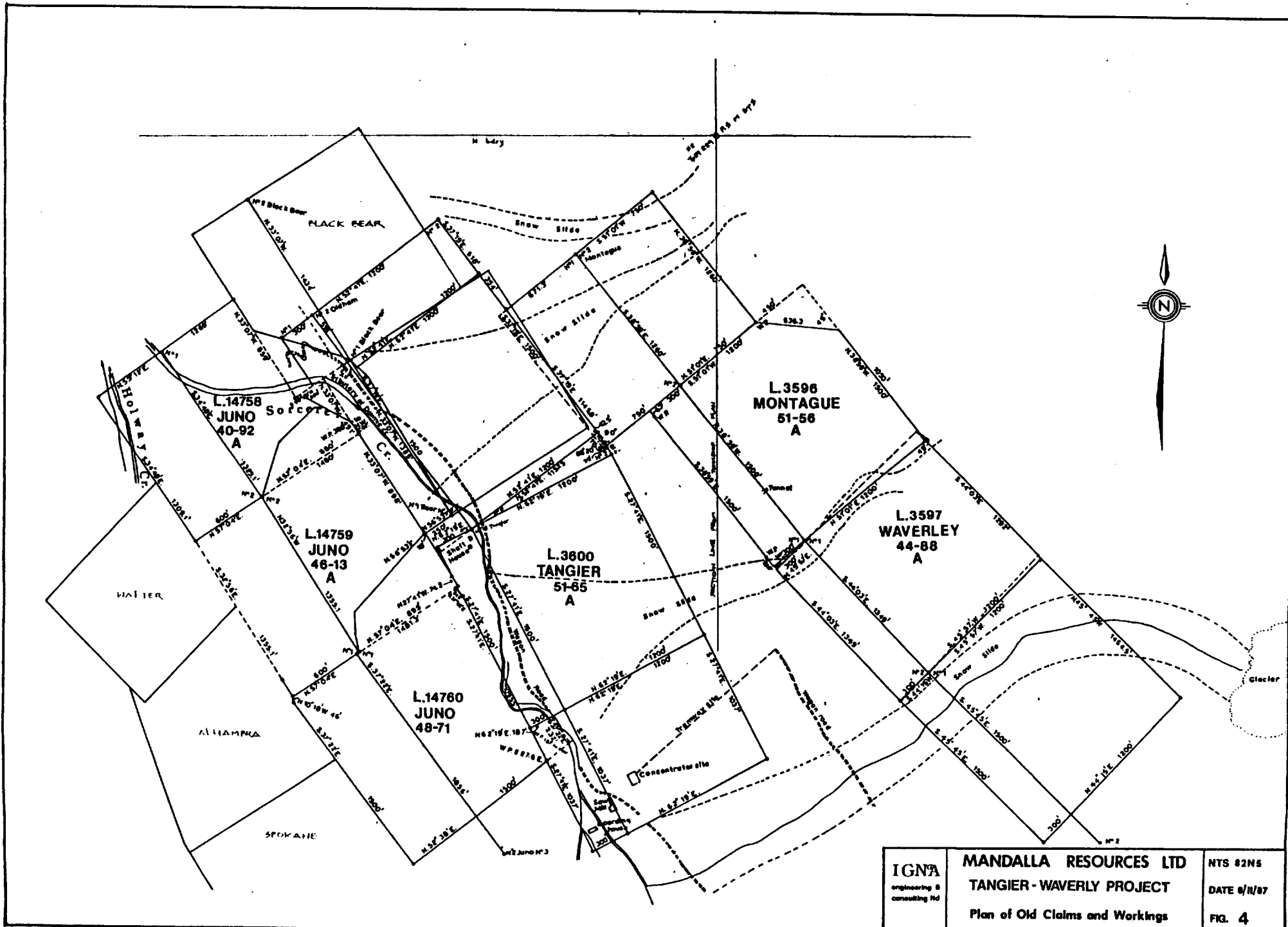
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Claim Map

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 #19 #20
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FIG. 2



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TANGIER-WAVERLY PROJECT
 Plan of Old Claims and Workings

NTS #2N5
 DATE 8/11/87
 FIG. 4

	Tag No.	Date recorded
Tangier 13(20)	121371	11/3/87
Tangier 14(20)	121372	"
Tangier 15(18)	121373	"
Tangier 16(12)	121374	"
Tangier 17(6)	121375	"
Tangier 18(4)	121376	"
Tangier 19(12)	121377	"
Tangier 20(12)	121378	"

Access:

Access to the property is by helicopter from the town of Revelstoke. In the past a road access to the workings was provided by the wagon road starting at the Albert Canyon on the Canada # 1 Hwy. about 30 km east of Revelstoke. About one half of this road starting from Albert Canyon was rebuilt and used by a logging company . The second half to the Tangier-Waverly area was overgrown and is being rebuilt.

Facilities and Services:

The town of Revelstoke is located on the banks of the Columbia River. It is an important railroad station and local center of administration.

Property Resources:

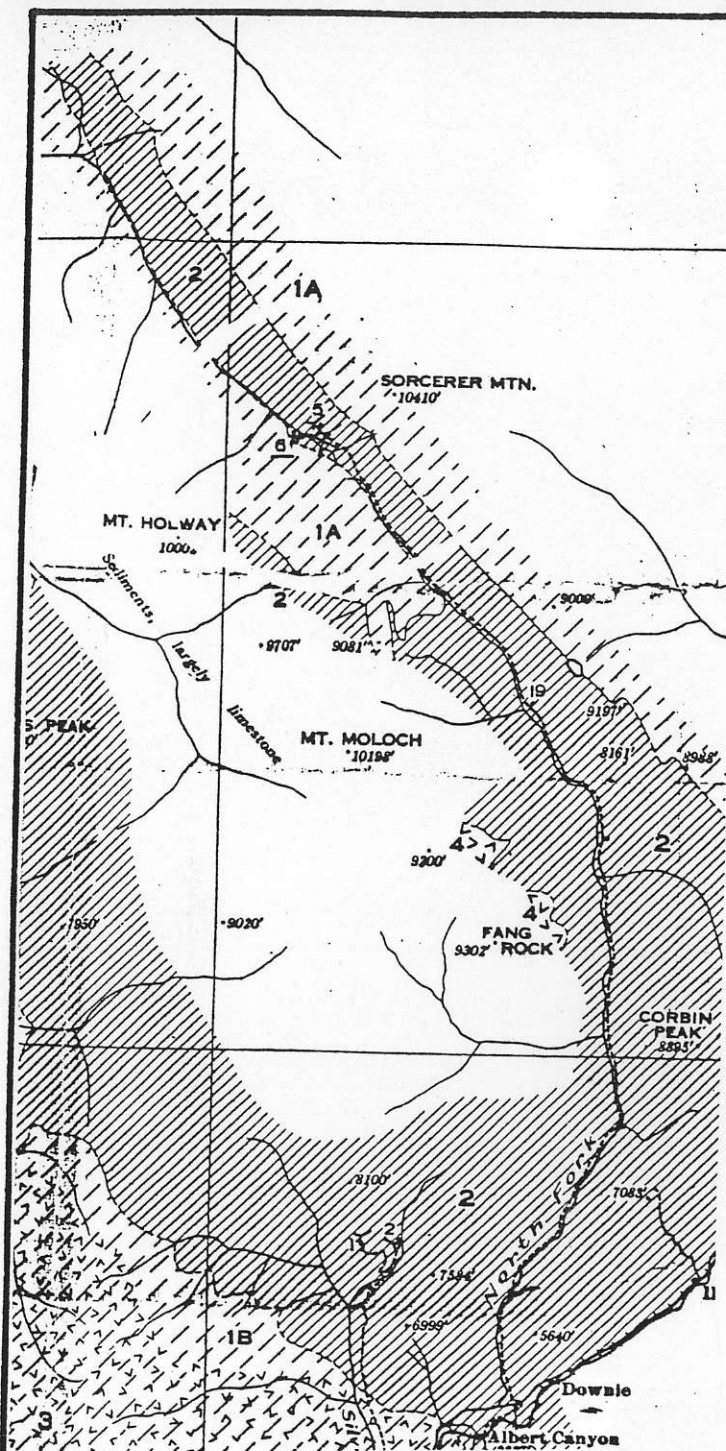
Timber, water, sand and gravel are available on or near the property. Heavy duty equipment with operators are available locally.

Room and board facilities for the exploration crew should be built near the old mine buildings on the Tangier property.

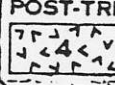
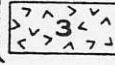


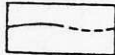

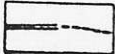
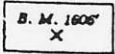
GEOLOGY

Regional Geology (Fig. 3) (H. C. Gunning 1928.)

"Underlying the map-area is a great series of metamorphosed Precambrian sediments which strike from north to northwest and dip to the east. Extrusive greenstones are interbedded with the sediments at certain horizons and intrusive rocks of similar appearance are rather sparingly developed. All these rocks are complexly folded in a series of essentially isoclinal anticlines and synclines. The sediments include crystalline limestones, quartzites, mica schists, slates, phyllites, argillites, and chlorite schists, and are cut by numerous stocks, dykes, and sills of granitic rocks of Mesozoic age. The latter include granite, granodiorite, quartz diorite, granite pegmatite, aplite, and a few fine grained lamprophyre dykes. Ortho and paragneisses are abundantly developed in the southwestern corner of the map area."



LEGEND

- MESOZOIC** (POST-TRIASSIC)  Porphyritic granite (4A); granite (4B); porphyritic granodiorite (4C); quartz diorite
- MESOZOIC AND PRECAMBRIAN**  Granite-gneiss, sedimentary gneiss, quartzite, schist; all cut by granite and pegmatite
- PRECAMBRIAN**  Crystalline limestone, argillite, quartzite, and schistose derivatives
- PRECAMBRIAN**  1A: quartzite, greenstone, minor amounts of argillaceous and calcareous sediments; 1B: mica schist, quartzite, greenstone, minor amounts of argillaceous schists and crystalline limestone
-  Geological boundary
-  Mine adit
-  Road and trail
-  Bench-mark

INDEX TO MINING PROPERTIES

1. Snowflake Group
2. Woolsey Group
3. Lanark (Wonderful and Crystal adjoins)
4. Donald (Woolsey Mines, Ltd.)
5. Waverley Group
6. Tangier Group
7. Mastodon
8. J. and L. Group
9. A. and E. Group
10. Roseberry
11. Standard Group
12. Keystone Group
13. Carbonate Chief
14. Montgomery Group
15. Piecer Gold
16. Piecer Gold
17. Ole Bull Group
18. Silver Shield Group
19. George Group

Scale. 253,440 or 1 Inch to 4 Miles



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Geology Map

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FIG. 3

Structure

The average strike is northwest and the dip steep (60 degrees to 90 degrees) to the northeast. Minor folding of a complex nature is abundant and shear zones and fissures are common. In the crystalline limestone at the Waverley two major joint systems, striking north 15 degrees east and north 45 degrees west and dipping 70 degrees northwest and 30 degrees southwest, respectively, are developed.

Property Geology (Figs 5 to 12) (after Gunning, H. C. 1928; Borovic, I. 1987)

The rocks underlying the claims include light grey, coarsely crystalline limestone with interbedded argillaceous, carbonaceous, or siliceous varieties that are generally fine-grained quartzites, argillaceous and carbonaceous to graphitic schists and phyllites, and some grey talcose and sericitic schists.

Waverley Area

All the workings on the Waverley group are in a band of light grey, crystalline limestone with fine-grained, argillaceous, and carbonaceous limestones intercalated, the whole calcareous member being about 2,500 feet thick. Below, or west of the marble, are argillaceous to carbonaceous grey or black schists and phyllites and above, or east of it, green or grey phyllites appear as intercalations in the limestone before the latter gives way to grey or brown quartzites with interbedded green and light grey phyllites. All the rocks dip steeply to the northeast and strike northwest. They are rather complexly contorted by minor folds.

It appears from the exposures examined that the Waverley veins are confined to a zone of dark grey or black, fine-grained limestone within the main light grey, coarsely crystalline band, and this zone is more complexly folded and twisted than the surrounding rocks. Within the zone are intercalations of the normal light grey marble.

Tangier area

On the Tangier claim a band of white to grey marble at least 120 feet wide strikes north 30 degrees to 35 degrees west and dips very steeply east or is vertical. On the west, the marble is adjoined by a considerable thickness of pyrite, black, carbonaceous schist. The workings are on the edge of Downie Creek.

The vein has been drifted on for 220 feet to the southeast. It consists of calcite and some quartz and a fine-grained mixture of pyrite, jamesonite, galena, sphalerite, and, at several places, small amounts of grey copper. The mineral identified as jamesonite (lead-sulph-antimonide) is quite abundantly but finely intergrown with the sphalerite and must contribute a large percentage of the lead in the ores. The vein is in the marble at or near the schist contact and occurs generally between two well-defined fault walls. Occasionally replacement of limestone by vein matter has enlarged the vein beyond the walls. Some mineralization was noted in the schists to the west of the vein proper. The width of the vein varies from 5 feet to a little more, to practically zero as the walls approach and withdraw, and averages about 2 feet.

MINERALIZATION

Waverley

The ores exposed in the Waverley are highly oxidized and consist of decomposed limestone, vein calcite, quartz, limonite, anglesite (lead sulphate), some cerussite (lead carbonate), malachite, and azurite, smithsonite (zinc carbonate), and occasional residual nodules of galena and argentiferous tetrahedrite. Silver and gold values are present. The total values are variable, ranging from practically zero to \$60 or \$70 per ton and more in the parts rich in residual sulphides. The present ores have been formed by oxidation, by descending meteoric waters of original gold and silver-bearing pyritic galena-sphalerite deposits in limestone. The sulphides were deposited along fissures in the limestone and by replacement of the limestone. Consequently the ores are found as irregular bodies more or less elongated along the predominating shear and fault zones. These zones trend about 60 degrees west and are generally bedded. Other fissures, trending northwest to northeast, have influenced the location of the larger ore-bodies. Veins of quartz and calcite, trending more northerly than the main ore zones, are also developed underground, but they are barren in most places.

Tangier

The sulphides, occurring very clean in several places are arranged in lenticular bodies along the vein. Grey copper seems most abundant where quartz is the predominant gangue mineral. At the southeastern face of the drift about 4 feet of quartz and calcite contain disseminations of sulphides and grey copper.

Assays given by B. T. O'Grady, assistant resident mining engineer, of sulphide ore from the shaft dump, show values of: gold, 0.06 ounce; silver, 16.0 ounces; lead, 8.5 per cent; and zinc, 5 per cent; and some of the cleaner pyrite assayed 5.6 ounces of gold per ton. These assays cannot be taken as representative of the ore exposed underground. It is reported by the present management that 15 tons of sulphide ore, shipped to Wales in the early days, contained 1.5 ounces gold, 130 ounces silver, and 25 per cent lead per ton.

Results of sampling in the early days of 1885 and 1921:

Description	Gold oz/t	Silver oz/t	Lead %	Zinc %	Copper %
15 tons hand-picked shipment made to Swansea, Wales, Circa 1885	1.50	130.0	25.0		
B. C. Minister Mines Report Page G 159, 1921. Pyrite Specimen	5.20	8.2			
Tangier Dump Heavily Mineralized (2) samples	2.082	25.4	25.2	2.62	0.16
C. Von Einsiedel	1.024	32.6	37.6	1.07	0.09
Tangier Dump Average	0.352	4.26	5.64	3.90	0.10
C. Von Einsiedel					
Tangier Dump Mostly Black Shale.	0.192	5.58	0.92	1.68	0.08
C. Von Einsiedel					

A number of other samples taken by B.C. Government's Engineers are reported in the Annual Report of the Minister of Mines, 1921; Pages G157 to G160, covering the Waverley and Tangier. Also a number of others in the Canadian Geological Survey, Summary Report, Part A, 1928, by H. C. Gunning. They are all pretty much the same as those shown above.

The writer evaluated the Tangier-Waverley area in October 1987. Following are assay results on samples collected by the writer:

Sample	Gold oz/st	Silver oz/st	Lead %	Zinc %
Tangier Dump				
4826 - C	0.024	1.71	0.35	15.46
4827	0.810	10.55	9.28	2.22
4828	2.902	12.62	13.98	1.19
4829	0.704	1.29	0.20	0.59
Waverley wall rock:				
4830	0.010	0.10	0.07	0.01
4831	0.006	0.05	0.02	0.01
4832	0.006	0.05	0.02	0.04
4833	0.010	0.08	0.01	0.06
4834 - C	0.010	0.05	0.01	0.01

The following samples were taken by W. O. Young, and part by the owners, and assayed by Bird Cowan in 1924:

#2 Tunnel 6.5 feet beginning from footwall in first stope

	Gold oz.	Silver oz.	Lead
	0.04	13.6	4.8
5 feet following	0.12	12.	3.1
12 " "	0.05	26.5	1.7
18 " "	0.06	18.9	4.7
5 " "	0.10	16.7	42.2
7 " "	0.06	22.4	3.7
12 " "	0.09	11.	5.8
10 " "	0.02	13.5	14.6
Select hard	0.25	96.3	24.4
Select Soft	0.04	37.8	12.6

#1 Tunnel

Top of winze 4 ft.	0.16	37.2	34.4
Bottom of winze 4 ft.	0.23	69.7	27.5
Croiping North	0.16	15.8	9.1
" "	0.20	44.6	17.5
" "	0.05	32.4	22.5
Short Tunnel			
North 3 ft.	0.09	11.9	19.8
Winze 3 ft.	0.07	23.4	18.7

Tangier

200 ton dump	0.32	25.4	17.9
200 ton coarse	0.03	32.6	19.5
Select dump	1.64	95.7	26.7
" "	1.07	73.2	27.6
Winze	0.63	64.9	23.

HISTORY OF MINING AND EXPLORATION

1986

The Tangier-Waverley property is mentioned in the Ministry of Mines reports. Some development of the surface exposures of the Tangier and Waverley veins started at that time by the Gold Fields of B. C. Limited.

1898

A great amount of work was done on the Waverley and Tangier mines, property of Gold Fields of B. C. Limited.

1899

A 160 foot tunnel was driven on Georgie and Reggie mineral claims, on the North Fork. Four tons of ore gave satisfactory assays in gold, silver and copper.

1915

After lying idle since 1899 the new management, composed of Seattle and Spokane men, planned excessive development. Trucks were employed to take ore to Albert Canyon and supplies back to the mines.

1919

G. H. Walters of Spokane and T. Graham and O. Sandberg of Albert Canyon acquired the property. There was a possibility of opening up a considerable body of low-grade silver-lead ore which, if successful, would mean more activity north of the CPR line.

1920

G. H. Walters had the old tunnels cleaned out in preparation for further mining and development work.

1921

Between 1918 and 1921 200 feet of tunnelling was dug by a crew of between 2 and 6 men.

The property is composed of two separate groups, the Waverley and Tangier.

The geology of the area is mapped. The conformable beds of siliceous and argillaceous limestones, slates, quartzites, and schists with north west- south east strike and dip to the north east underlie the property.

Waverley
(Fig.s 5 to 10)

In 1921 underground workings, which in the aggregate will amount to about 3,000 lineal feet, mostly crosscut, and develop one big ore-shoot. In this shoot, which lies on the foot-wall side of the vein, extensive replacement of limestone walls has occurred.

The Waverley ore is composed of carbonates with small amount of galena. The average silver content of samples collected by the Resident Engineer of the B. C. Bureau of Mines in 1921 "appear to lie between 30 and 50 oz/ton, the lead content varying from trace to 18 %. The gold values appear to be negligible." In the following assays also collected and reported by the Resident Engineer gold values at todays prices are all but negligible.

Tunnel #1 was driven 90 feet on the vein below its apex. Vein width varied from 14 inches to 2 feet. Near the portal a winze was sunk to a depth of 45 feet. A sample across 2 feet at the top of the winze gave: Au 0.06 oz; Ag 39.02 oz; Pb 17%.

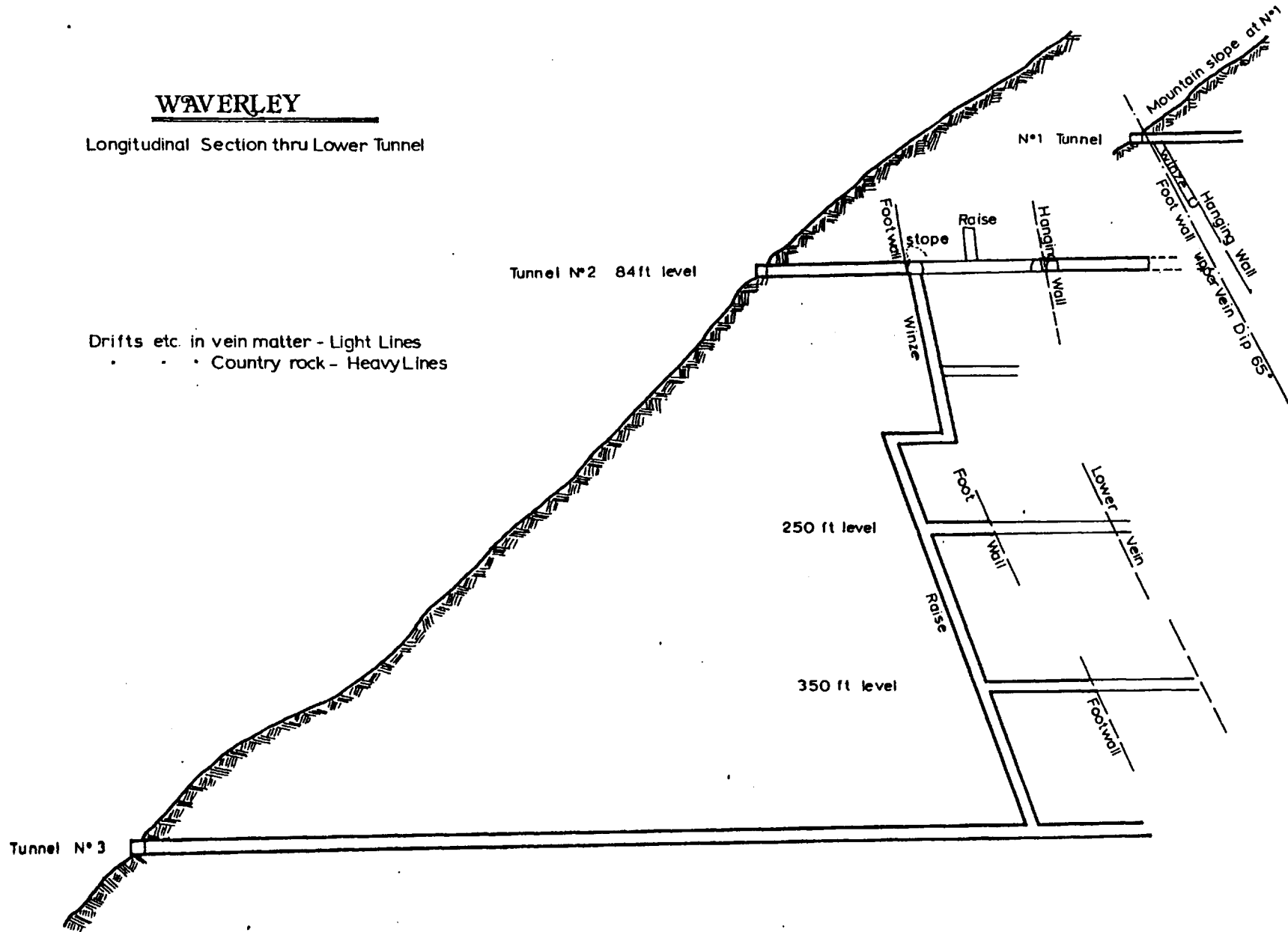
Tunnel #2 was a crosscut 330 feet in length. The foot-wall of the ore body was reached 85 feet from the portal and drifted 85 feet northwesterly and 50 feet southeasterly. A sample across a width of 10 feet in the stope, caused by the intersection of the crosscut and the two drifts, gave:
Au 0.24 oz; Ag 77.2 oz; Pb 18%.

The total width of mineralized zone cut by the main tunnel is approximately 66 feet. Mineralization is strongest on the foot-wall side of the zone.

The crosscut was continued 245 feet and samples across 34 feet gave: Au 0.02 oz; Ag 16 oz; Pb 2.5 %.

WAVERLEY

Longitudinal Section thru Lower Tunnel



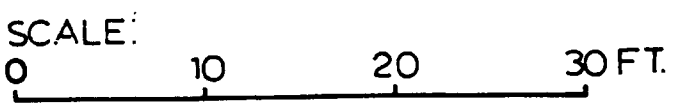
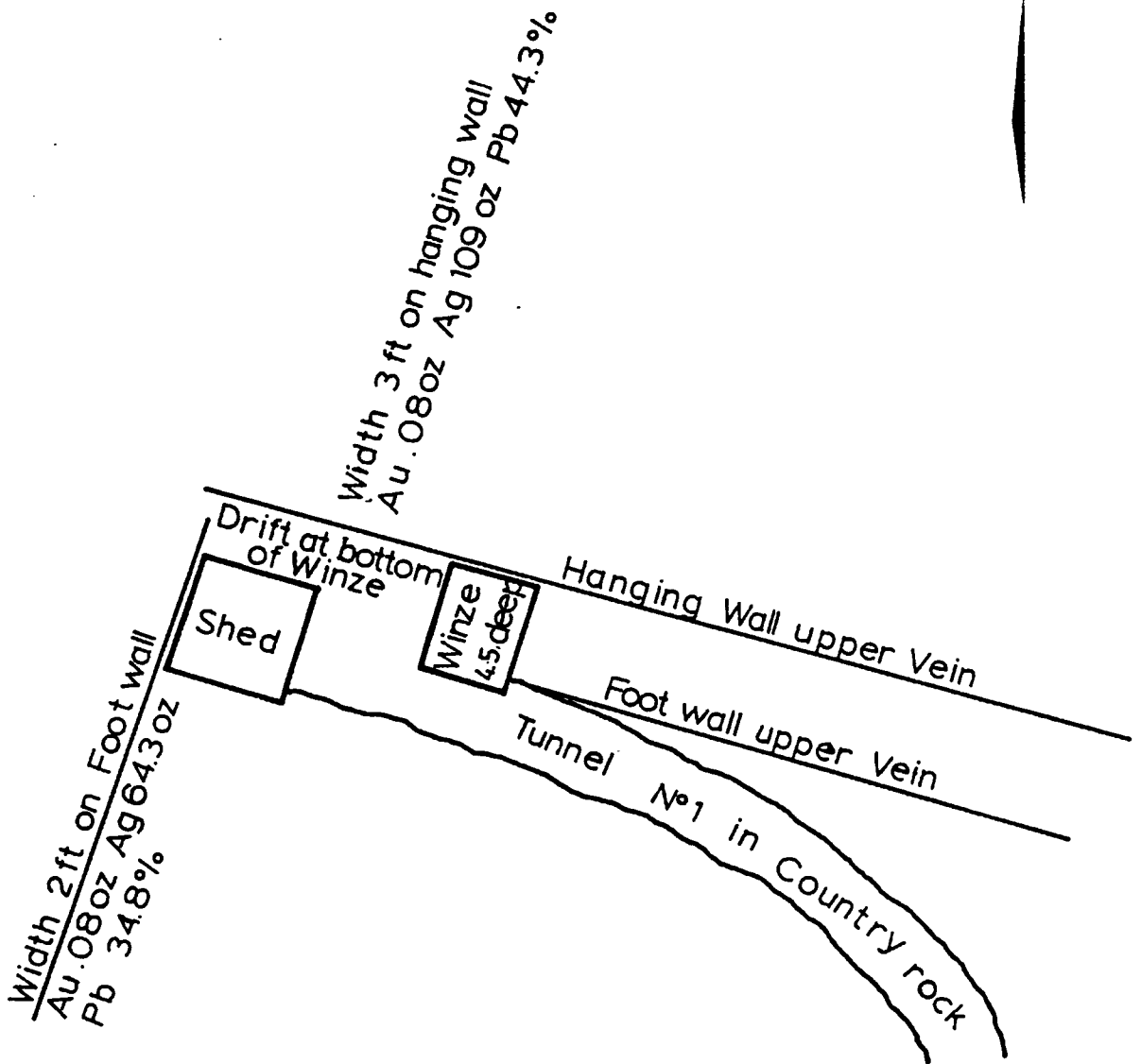
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Longitudinal Section thru Lower Tunnel
- Waverley

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FIG. 5

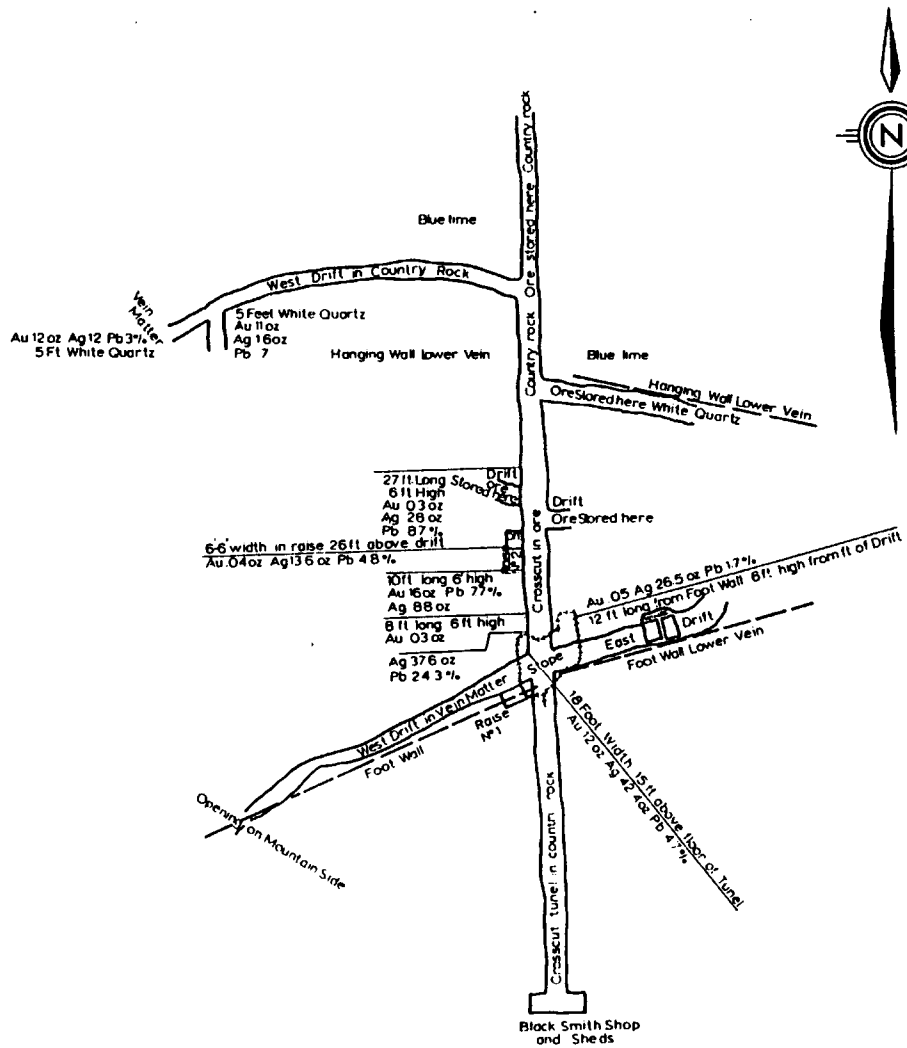


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Tunnel No 1 - Waverley

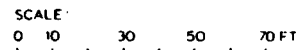
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FIG. **6**



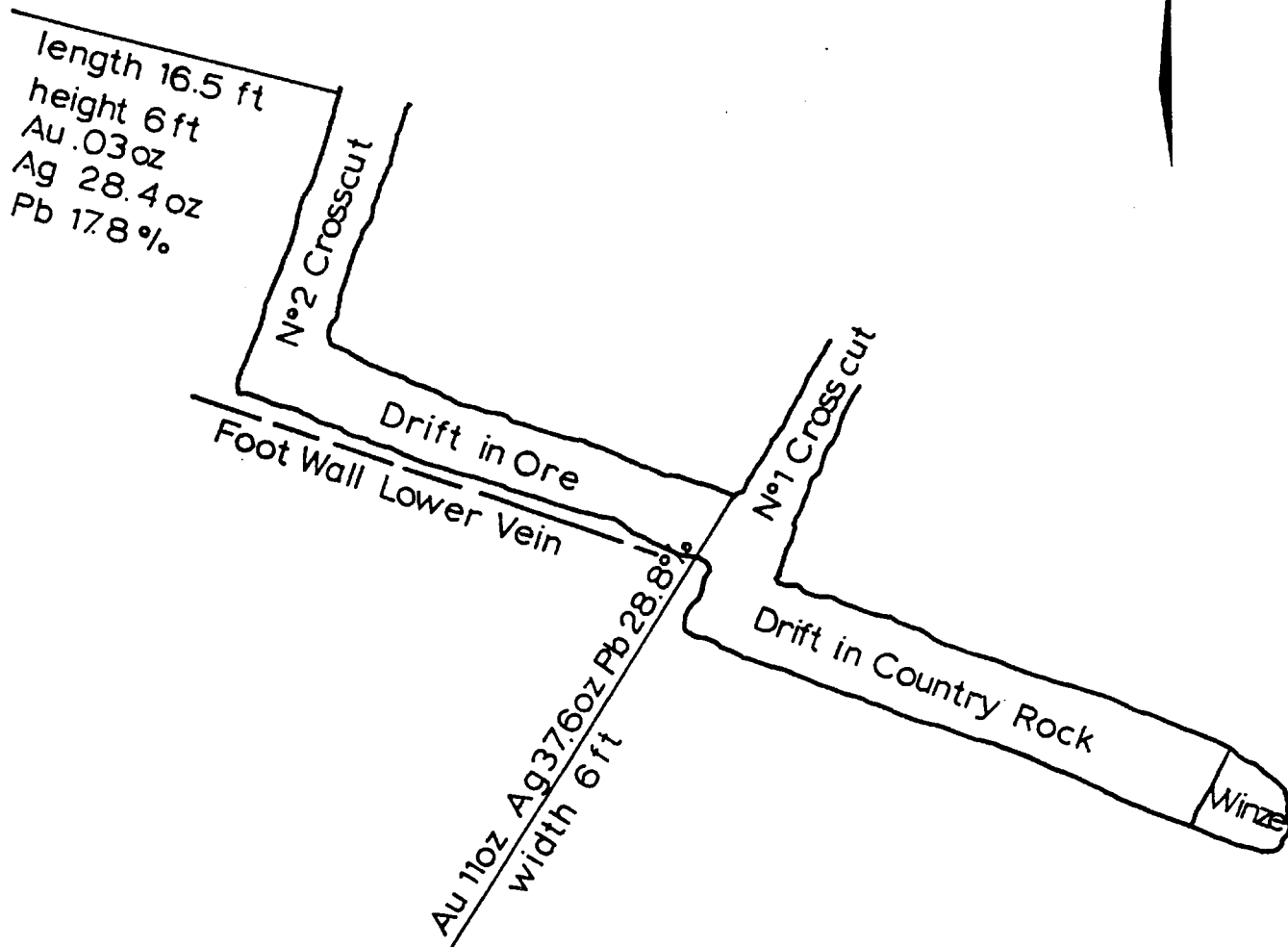
WAVERLEY MINE

UNCHARTED ASSAYS

Picked Sample	Au oz	Ag oz	Pb %	
General	36	414	312	Ore piles in N°2 Tunnel Est tons 230
Picked	05	54	34	Pt of Sinking Ore Montagu claim 750 ft West N°2 Tunnel
General	36	385	47	Bottom of 17' Winze 4.5' wide
Cobbed Ore	12	160	38	5' wide Cropping 350 ft West N°2 Tunnel Mostly from N°2 Tunnel to Swansea - only shipment made



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	TANGIER - WAVERLEY PROJECT	DATE 8/11/87
	Tunnel N°2 84 Foot Level - Waverley	FIG. 7



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150 Foot Level - Waverley

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DATE 8/11/87

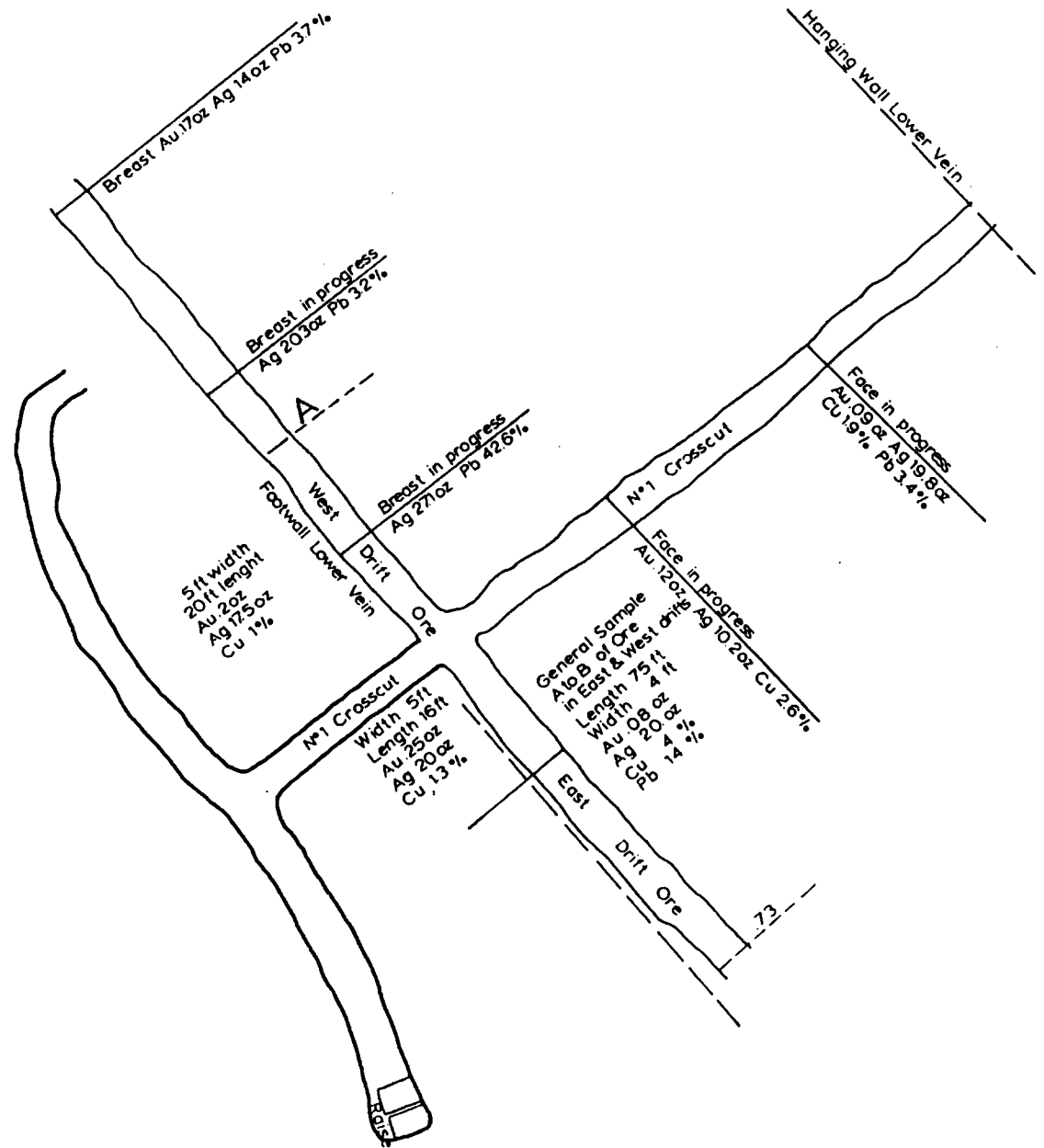
FIG. 8

WAVERLEY MINE
250 FOOT LEVEL

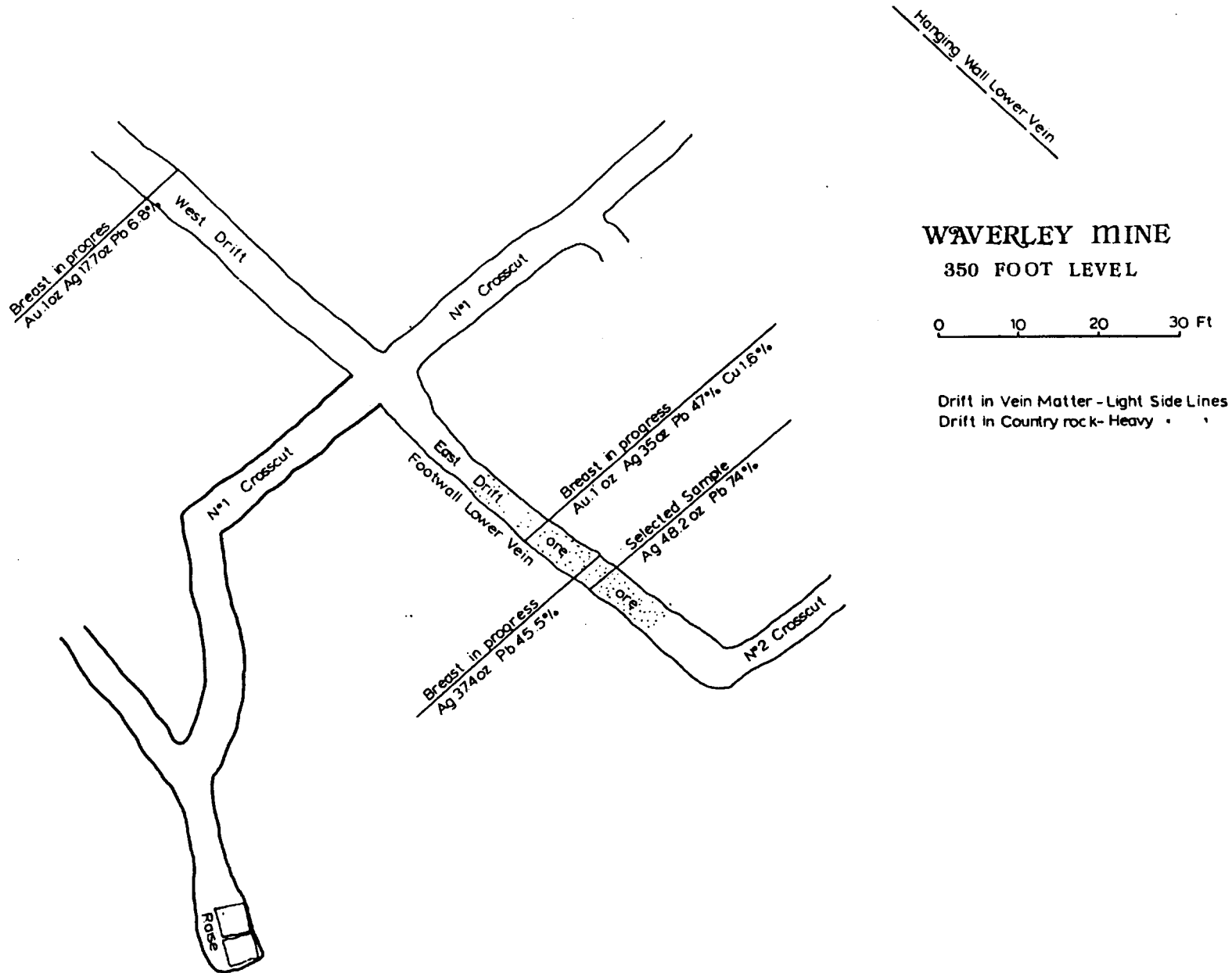
0 10 20 30 FT.



Drifts in Vein Matter - Light side lines
Drifts in Country rock - Heavy



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	250 Foot Level - Waverley	
	FIG. 9	



Another tunnel was driven along the main crosscut. Several short tunnels and a 26 foot raise off the main crosscut in the ore-zone showed strong mineralization. A grab sample from several hundred tons of material gave: Au 0.14 oz; Ag 36.8 oz; Pb 15.5 %.

Tunnel #3, located 450 feet vertically below Tunnel #1, is a crosscut about 635 feet long which was apparently discontinued a short distance from the expected intersection with the vein.

Tangier (Fig.s 11 & 12)

Tangier development consisted of 110 feet of double compartment shaft, 829 feet of tunnelling and a 100 foot winze. The ore developed was of the replacement type. A grab sample from several hundred tons of ore sampled: Au 0.06 oz; Ag 16 oz; Pb 8.5 %; Zn 5 %. (From the same sample a picked specimen of pyrite gave: Au 5.6 oz; Ag 8.2 oz.)

The Tangier ore differs from that of Waverley in that there was generally less evidence of oxidation and Tangier ore contained appreciable gold values in association with pyrite.

The ore shoot in the northwesterly drift showed little mineralization. A sample across 4 feet gave: Au trace; Ag 0.8 oz; Pb nil; Zn 2.5 %.

1923

Orville Young supervised road construction at the Waverley mine. The road from Albert Canyon was improved after Flat Creek route was abandoned. The old workings were cleared and timbered (for complete observation). A small crew stayed through the winter.

1924

Orville Young directed a small crew at the Waverley Tangier property. (see Annual Report for 1921)

1925

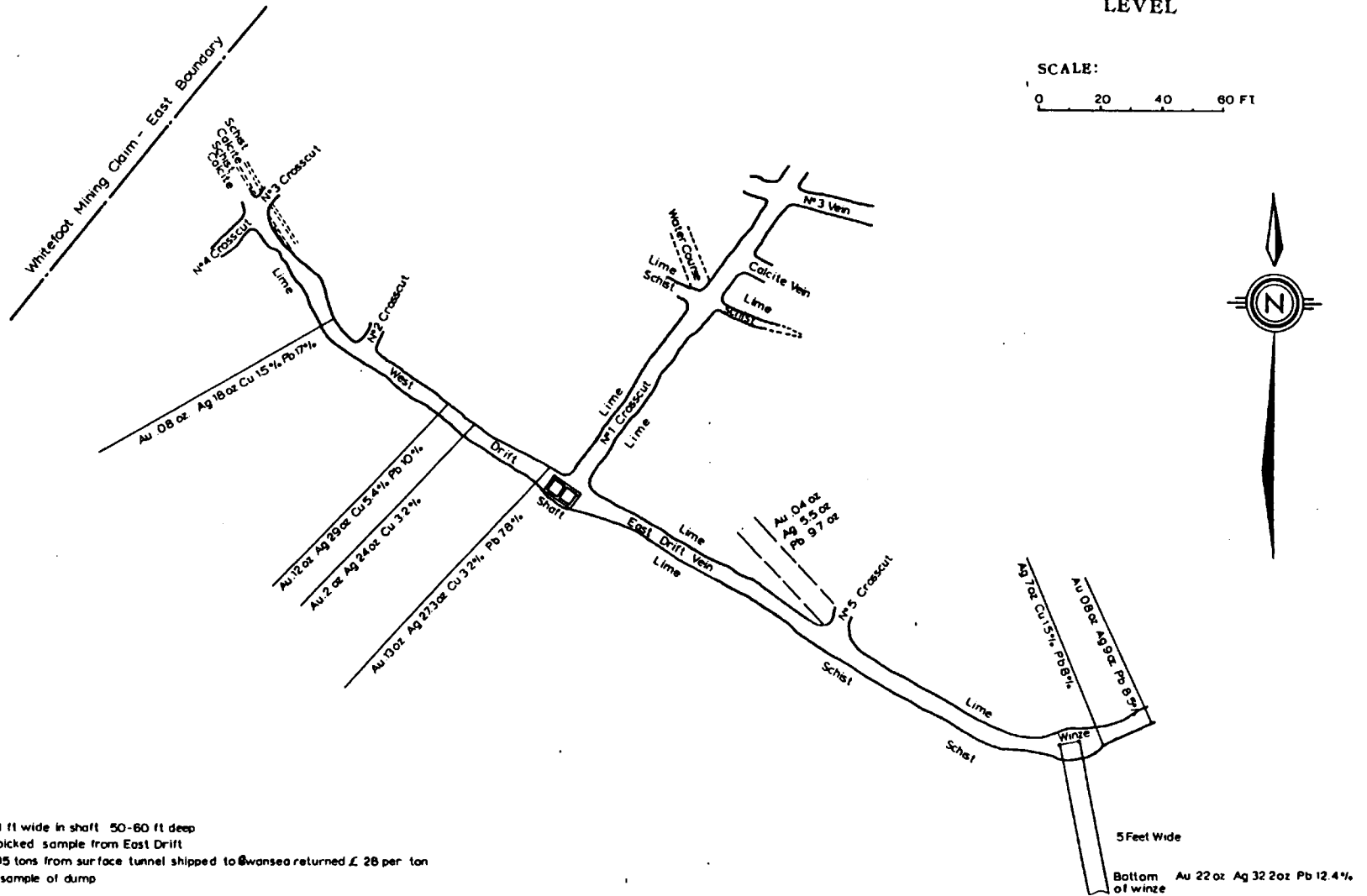
A small crew was employed. The winze from the 100-foot level of the Tangier was reported to have been unwatered, exposing a nice showing of silver-lead ore.

1929

Active exploration of the Tangier-Waverly vein and replacement mineralization continued on strike toward south east.

TANGIER MINE
100 FOOT
LEVEL

SCALE:



Au	Ag	Cu	Pb
Oz	Oz	%	%

12	184	22	6.5	3 ft wide in shaft 50-60 ft deep
46	152	146	8.3	picked sample from East Drift
15	130	7	25	15 tons from surface tunnel shipped to Wanslea returned £ 28 per ton
32	254	73		sample of dump

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TANGIER - WAVERLEY PROJECT
 100 Foot Level - Tangier

NTS 02N5
 DATE 8/11/87
 FIG. 11

George property, 21 miles up the Tangier river, D. and O. Woolsey continued surface exploration. (see H. C. Gunnings 1928 Summary Report, Part A, G.S.C.). The property was acquired by Woolsey Mines Limited.

A small amount of exploratory work was done on the Waverley and Tangier property during the summer season.

1951

An effort was made to reopen the old property at the head of Tangier Creek and off the north fork of Downie Creek. Six miles of road was rehabilitated before forest fires on Tangier creek shut down operations.

1968

Ottomac Mines Limited, with government assistance built 20 miles of new road along the old wagon road. About 2000 sq. feet of bedrock was hydraulically stripped and 10 diamond drill holes totalling about 500 feet were drilled. The work was done on the George property .

WORK DONE 1987 (Fig.s 12 to 18)

A short exploration program was accomplished during month of October. Work comprised geological mapping and short grid control lay out in order to define drilling parameters necessary to evaluate known mineralization in the Tangier and Waverley Mines.

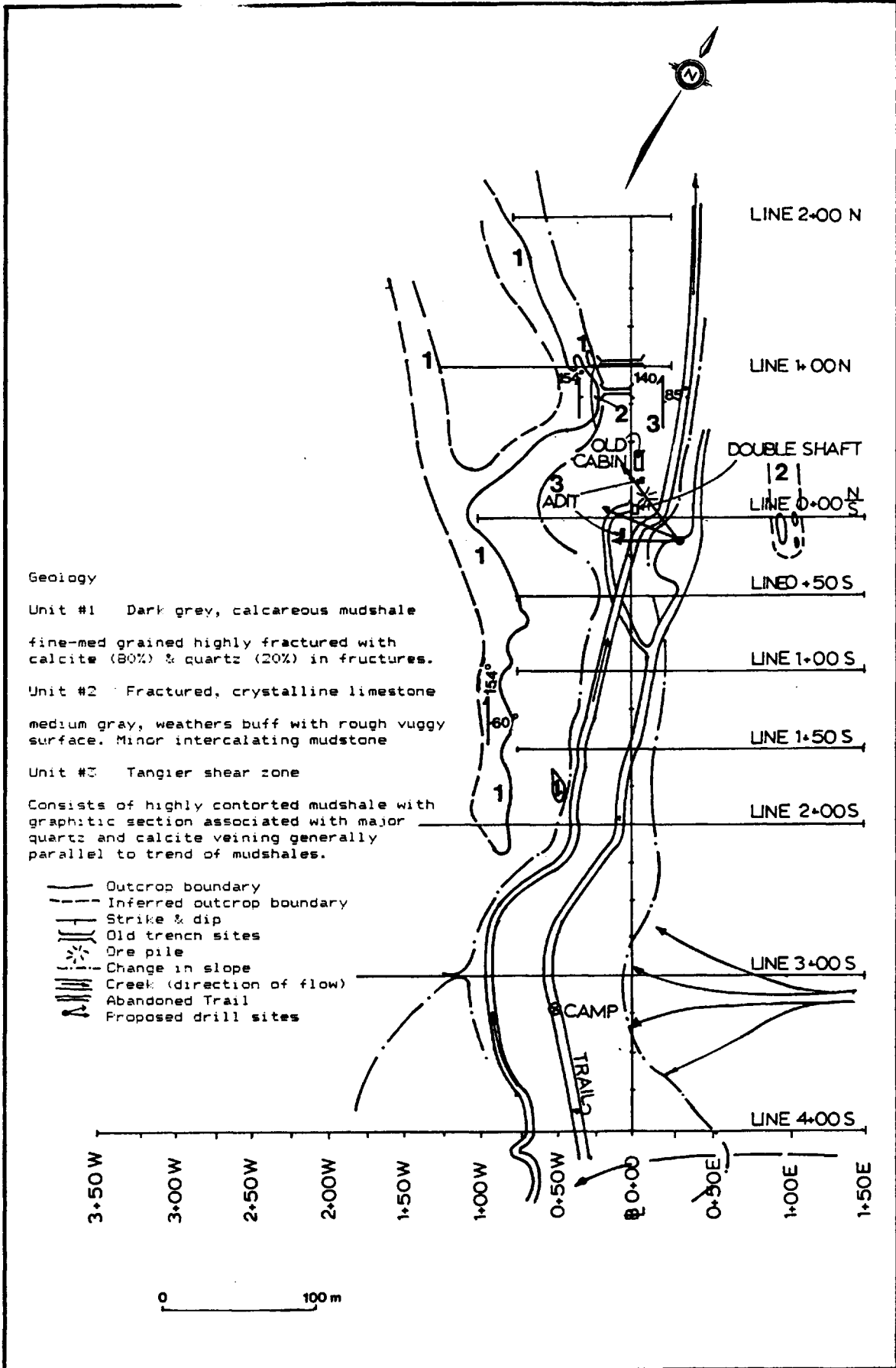
It is understood that successful evaluation should be followed by extensive geophysical, geochemical and geological work over the whole property thus providing good correlation with existing mineral areas located in the Tangier, Waverley and George areas.

FINDINGS

Waverley

Summary Geology:

The property consists mainly of crystalline limestones with intercalated calcareous mudshales. Also present are minor graphitic schists or phyllites and very minor bands of quartzite. Structural trends of the formations is approximately 130 dipping 65 east. Major jointing was found around Tunnel #3.



Geology

Unit #1 Dark grey, calcareous mudshale
fine-med grained highly fractured with
calcite (80%) & quartz (20%) in fractures.

Unit #2 Fractured, crystalline limestone
medium gray, weathers buff with rough vuggy
surface. Minor intercalating mudstone

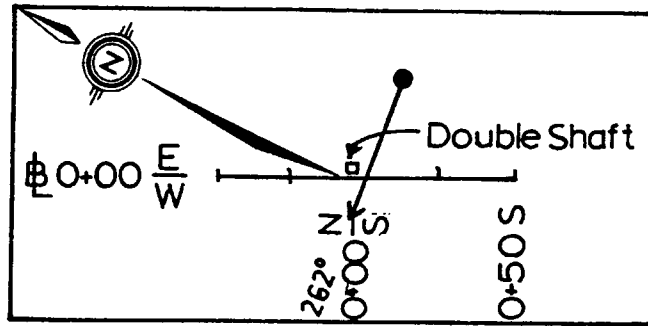
Unit #3 Tangier shear zone
Consists of highly contorted mudshale with
graphitic section associated with major
quartz and calcite veining generally
parallel to trend of mudshales.

- Outcrop boundary
- Inferred outcrop boundary
- Strike & dip
- Old trench sites
- Ore pile
- Change in slope
- Creek (direction of flow)
- Abandoned Trail
- Proposed drill sites

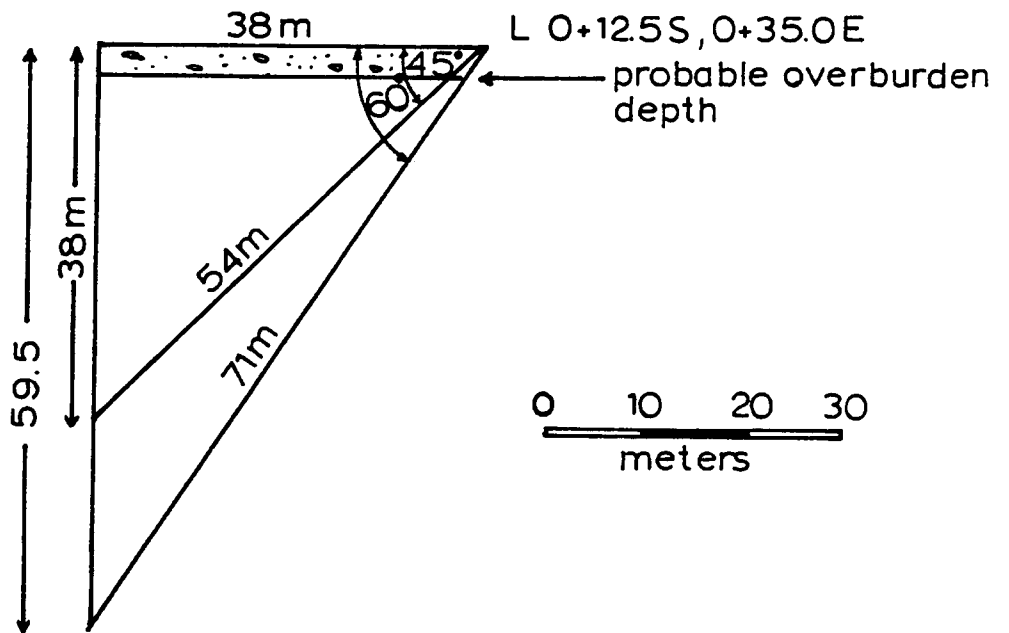
0 100 m

<p>IGNA engineering & consulting ltd</p>	<p>MANDALLA RESOURCES LTD TANGIER - WAVERLEY PROJECT Geology and Proposed Drill Holes - Tangier</p>	<p>NTS 82N5 DATE 8/11/87 FIG. 12</p>
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PLAN VIEW



CROSS SECTION



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TANGIER - WAVERLEY PROJECT

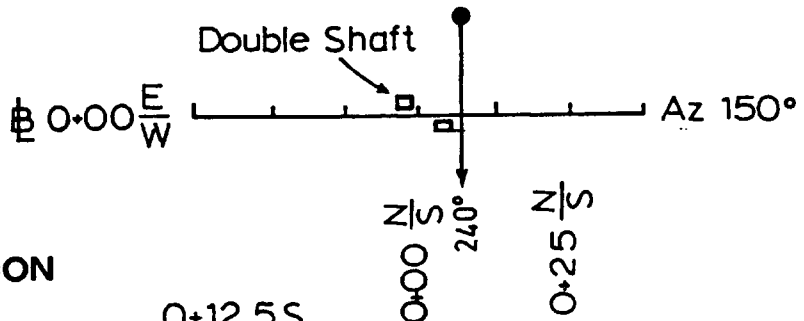
Proposed Drill Holes N°1 & 2 - Tangier

NTS 82N5

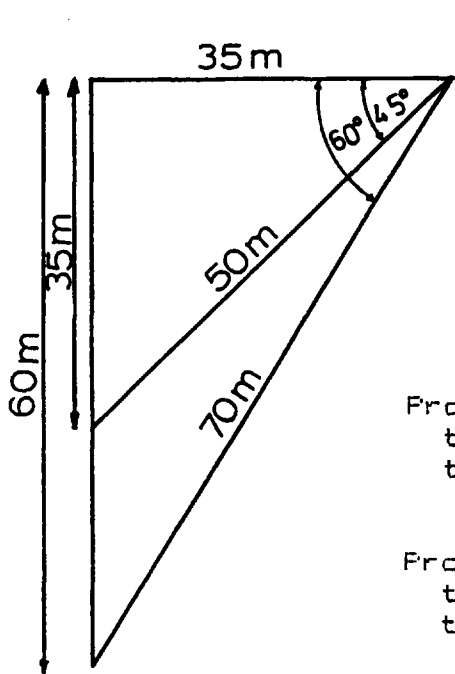
DATE 8/11/87

FIG. 13

PLAN VIEW



CROSS SECTION



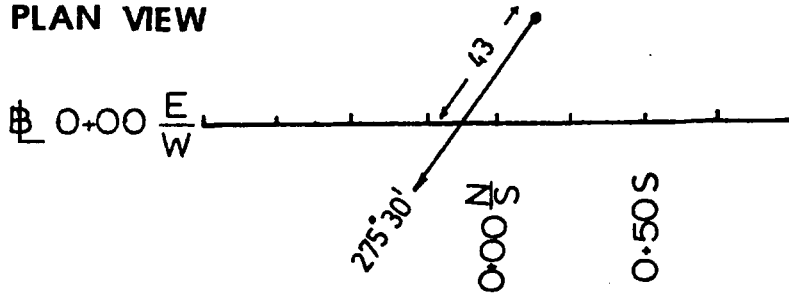
Proposed drillhole #3 (45)
 total vertical depth to intersection <35 m
 total drill length to intersection <50 m

Proposed drillhole #4 (60)
 total vertical depth to intersection <60 m
 total drill length to intersection <70 m

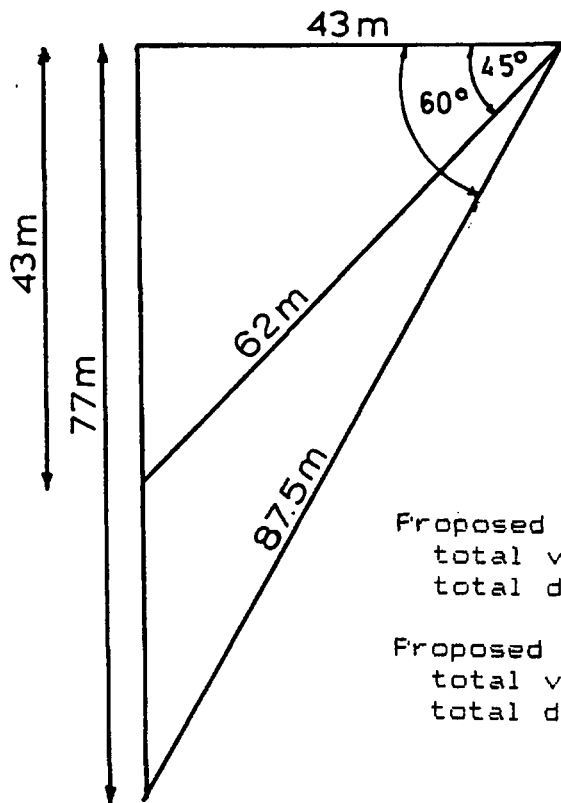


<p>IGNA engineering & consulting ltd</p>	<p>MANDALLA RESOURCES LTD TANGIER-WAVERLEY PROJECT Proposed Drill Holes N°3&4 - Tangier</p>	<p>NTS 82N5 DATE 8/11/87 FIG. 14</p>
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PLAN VIEW

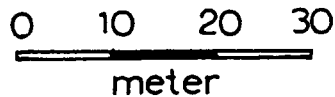


CROSS SECTION



Proposed drillhole #5
 total vertical depth 43 m
 total drill length 62.0 m (to intersect)

Proposed drillhole #6
 total vertical depth 77 m
 total drill length 87.5 m (to intersect)



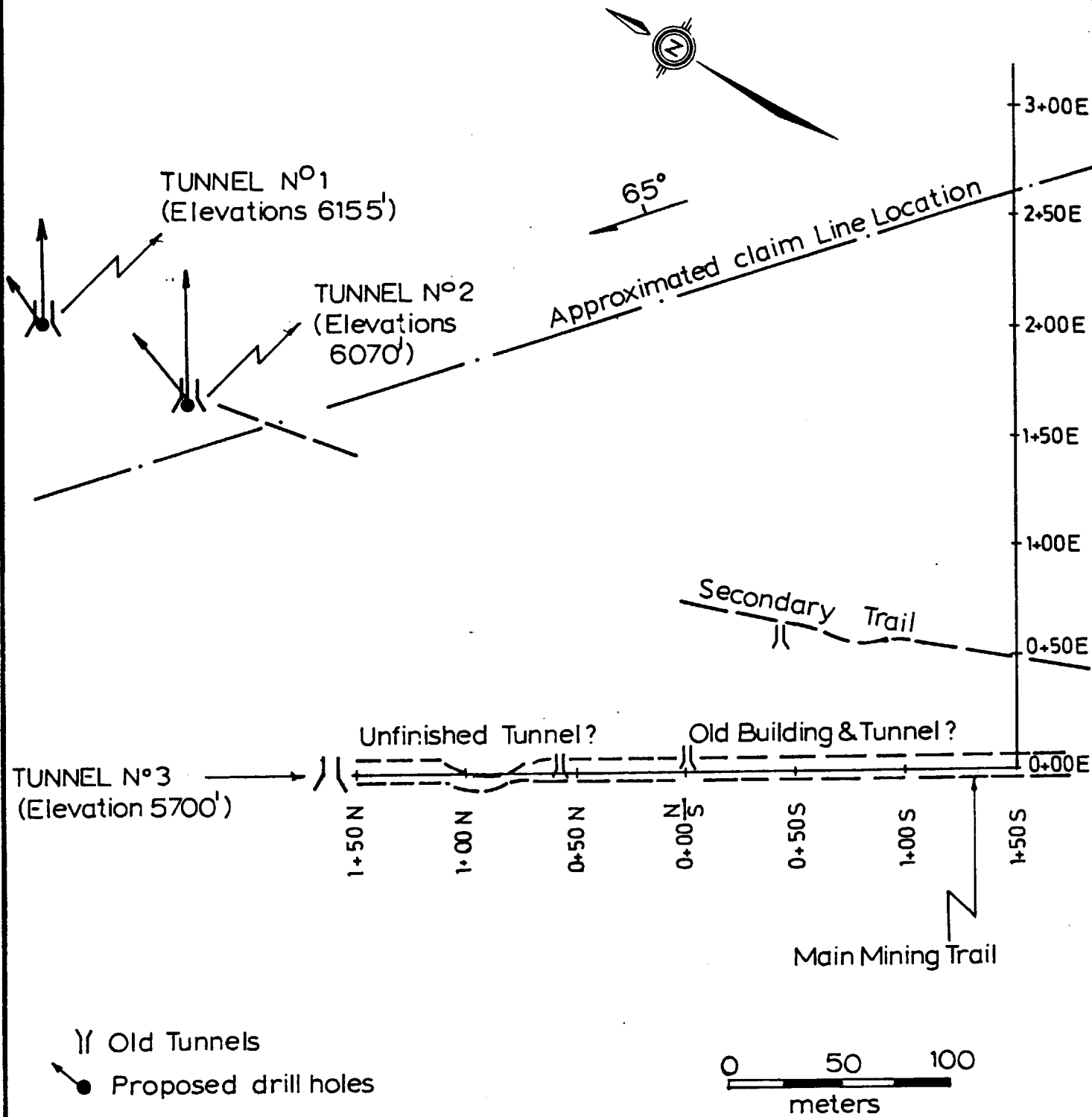
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Proposed Drill Holes N°5 & 6 - Tangier

NTS 82N5
DATE 8/11/87

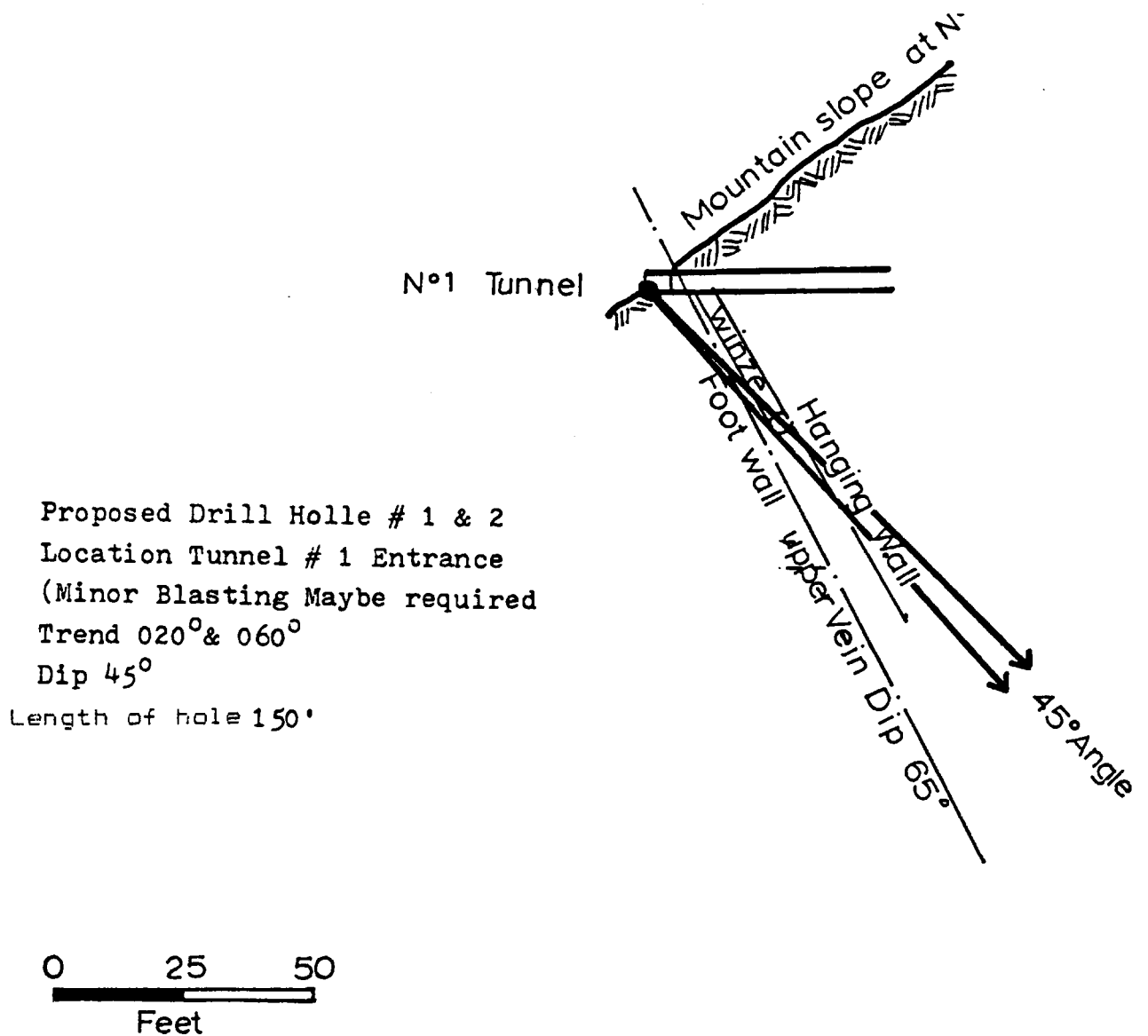
FIG. 15



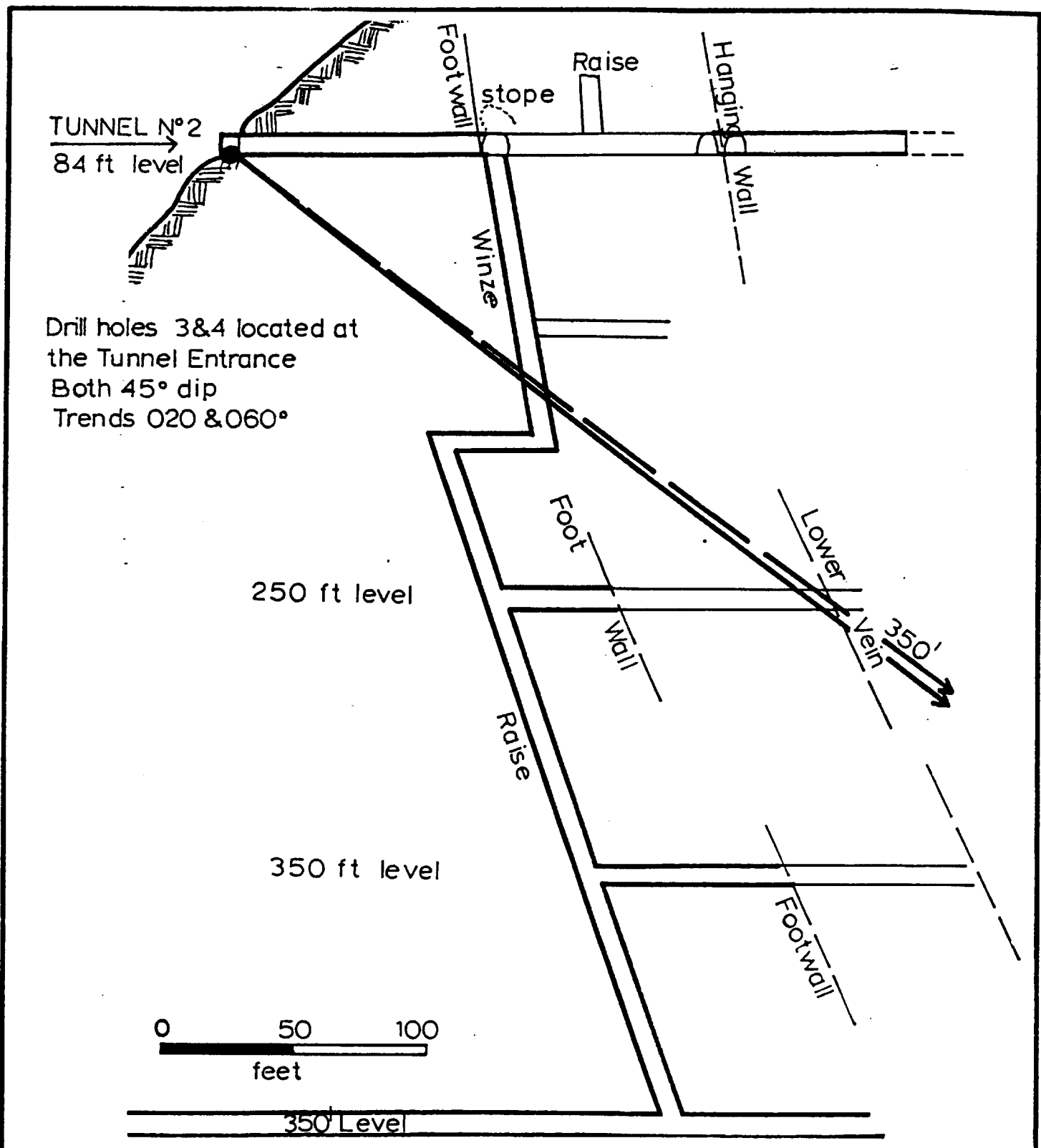
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TANGIER - WAVERLEY PROJECT
Proposed Drill Holes - Waverley

NTS 82N5
 DATE 8/11/87
 FIG. **16**



<p>IGNA engineering & consulting ltd</p>	<p>MANDALLA RESOURCES LTD TANGIER - WAVERLEY PROJECT Proposed Drill Holes Tunnel N^o1 - Waverley</p>	<p>NTS 82N5 DATE 8/11/87 FIG. 17</p>
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TANGIER - WAVERLEY PROJECT
Proposed Drill Holes
Tunnel N°2 - Waverley

NTS 82N5
DATE 8/11/87
FIG. 18

Recommendations:

Due to the ruggedness of the terrain and resulting physical limitations four drill holes are located as shown on the Fig.s 16, 17 & 18.

Tangier

Following work was done in October 1987.

Total of 3,25 km of grid was picketed and flagged.

About 0.6 km of cut baseline with stations spaced every 25 m. and total of 2.725 km of cross lines with stations spaced every 25 m.

Summary Geology

Grid area is underlain mainly by calcareous mudshales trending 154 dipping 60 -72 East. A band of crystalline limestone intercalated with mudshales trends towards the old double shaft (trends within 20 meters west of double shaft). At location 0+25N 0+12.5E there is an old shaft(?) with exposed outcrop consisting of graphitic mudshales, highly sheared with intense fracture filling and some replacement. Rock sample #302 Q taken at this location contains 1-3% galena, 1% pyrite, 5% chalcocite (?). In the creek northeast of the double shaft, the outcrop consists of highly contorted mudshales graphitic sections associated with major quartz and calcite veining. The dip increase from 60 up to 90 as you proceed from unit 1 east towards the 'Tangier Sheer'.

Recommendations

Six drillholes are recommended on the "Tangier Zone" at this time. These holes cover known near surface exposures of replacement mineralization and check the depth potential of these zones. The drill holes can all be located at the same site (0+12.5S 0+35.0E) See Fig.s 12, 13, 14 & 15.

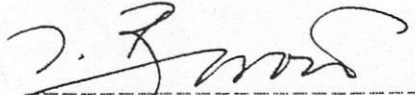
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C E R T I F I C A T E

I, Ignacije Borovic, of the city of Vancouver, B.C., do hereby certify that:

1. I am a member of the Association of Professional Engineers in the province of British Columbia.
2. I am employed by Igna Engineering and Consulting Ltd. with offices at 4258 West 10 th Avenue, Vancouver, B.C.
3. I am a graduate of the University of Zagreb, and I have practiced continuously as a geologist and graduate geological engineer since 1962.
4. I do not have any direct or indirect interest in the properties or securities of MANDALLA RESOURCES Ltd. nor do I expect any.
5. This report is based on research, study and exploration work performed by me and under my supervision.
6. Permission is granted to MANDALLA RESOURCES Ltd. to use this report to satisfy the requirements of the B.C. Securities Commission and/or the Vancouver Stock Exchange.



I. Borovic, P. Eng.

Vancouver, B.C.
Nov. 9, 1987.

T. E. ARNOLD

REGISTERED PROFESSIONAL ENGINEER

446 Roosevelt Avenue,
OAKHURST, N. J. 07755
(201) 531-2426

December 16, 1987

Mr. Terry Heard,
C/o Equity Silver Mines,
Vancouver, B. C.

Dear Terry:

A few things that I am anxious to ascertain:

(1) What did you do with Whalen, and Silver Bow? Haven't heard a word since you told me you would see him on your trap east. Presume that matter is settled, or would have heard something?

(2) Free gold was encountered at J&L in two places. Particle size up to about a pennyweight. Also reported it can be panned from dumps. This either means the character of the ore is changing at depth; or the complexity is pretty much a surface condition. Anyway if you want further details contact Ken Sanders at Pan Am.

(3) I got Nelson Skalbania to take a shot at Waverley-Tangier on the eastern flank of the Syncline. Report attached. Some good assays on Tangier, but think he is drilling wrong. Very good reason for this assumption.

(4) I told you I wanted to do something for Jane. She is a real nice kid. Sending her a separate card with enclosure. If you don't approve then give her something.

(5) Am investigating a super oxidant that is reported to oxidize (solubilize) massive sulphides in no time flat. Stated material is cheap. Would also work on complex Equity ores. Should know soon. If you got a cheap method of handling Equity ores you are really IN.

Merry Xmas, etc. '88 looks like a winner.

Very truly yours,

T. E. Arnold
T. E. (TED) Arnold.